ICMAT
INSTITUTO DE CIENCIAS MATEMÁTICAS

SPECIAL COLLOQUIUM

MODULI SPACES OF UNSTABLE CURVES

SPEAKER: Frances Kirwan (University of Oxford)

PLACE: ICMAT Orange room (Campus de Cantoblanco, Madrid)

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ABSTRACT: Moduli spaces arise naturally in classification problems in geometry. The study of the moduli spaces of nonsingular complex projective curves (or equivalently of compact Riemann surfaces) goes back to Riemann himself in the nineteenth century.
The construction of the moduli spaces of stable curves of fixed genus is one of the classical applications of Mumford's geometric invariant theory (GIT), developed in the 1960s. Here a projective curve is stable if it has only nodes as singularities and its automorphism group is finite. The aim of this talk is to describe these moduli spaces and outline their GIT construction, and then explain how recent methods from non-reductive GIT can help us to classify the singularities of unstable curves in such a way that we can construct moduli spaces of unstable curves (of fixed singularity type).

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